CLAIMS

1. (Amended) A liquid crystal display device comprising a liquid crystal display panel in which a first substrate formed with a signal electrode and a second substrate formed with a counter electrode on one surface respectively are coupled together, with said signal electrode and said counter electrode opposed each other, with a fixed gap therebetween provided by interposing a sealing part at an outer peripheral part of a display area, and a liquid crystal layer is provided in the gap, wherein

said signal electrode is composed of a surrounding electrode formed over almost the whole area of said display area, a pattern electrode isolatedly formed within said surrounding electrode, and a wiring electrode formed across said surrounding electrode with a gap provided between said wiring electrode and said surrounding electrode in order to selectively apply voltage to said pattern electrode,

said counter electrode is provided over the whole area of said display area to face said signal electrode,

said first substrate, said second substrate, said signal electrode and said counter electrode are all transparent,

said liquid crystal layer is a scattering type liquid crystal layer which changes in transmittance and scattering rate depending on existence or absence of application of voltage by means of said signal electrode and said counter electrode, in which transparency increases in a part to which voltage is applied, and

a light source means which emits linearly polarized light is disposed outside a peripheral part of said liquid crystal display panel, and at least a part of said sealing part facing the light source means has a light transmitting

property to allow linearly polarized light emitted from said light source means to pass through said sealing part and enter said liquid crystal layer.

2. (Amended) A liquid crystal display device comprising a liquid crystal display panel in which a first substrate formed with a signal electrode and a second substrate formed with a counter electrode on one surface respectively are coupled together, with said signal electrode and said counter electrode opposed each other, with a fixed gap therebetween provided by interposing a sealing part at an outer peripheral part of a display area, and a liquid crystal layer is provided in the gap, wherein

said signal electrode is composed of a pattern electrode isolatedly formed within said display area, and a wiring electrode formed across said display area in order to selectively apply voltage to said pattern electrode,

said counter electrode is provided in an area to face said pattern electrode,

said first substrate, said second substrate, said signal electrode and said counter electrode are all transparent,

said liquid crystal layer is a scattering type liquid crystal layer which changes in transmittance and scattering rate depending on existence or absence of application of voltage by means of said signal electrode and said counter electrode, in which a scattering degree increases in a part to which voltage is applied, and

a light source means which emits linearly polarized light is disposed outside a peripheral part of said liquid crystal display panel, and at least a part of said sealing part facing the light source means has a light transmitting property to allow linearly polarized light emitted from said light source means to pass through said sealing part and enter said liquid crystal layer.

3. (Amended) A liquid crystal display device according to claim 1,

wherein

said liquid crystal display panel, in which an outside of said second substrate is a visible side, always presents a condition outside said first substrate to the visible side,

a luminosity of a scattering part, where the transparency does not increase, of said liquid crystal layer becomes higher than luminosities of other parts while a light source part of said light source means is turned on, and

the luminosity of said scattering part of said liquid crystal layer becomes lower than the luminosities of the other parts while said light source part is turned off.

4. (Amended) A liquid crystal display device according to claim 2, wherein

said liquid crystal display panel, in which an outside of said second substrate is a visible side, always presents a condition outside said first substrate to the visible side,

a luminosity of a scattering part, where the scattering degree is increased, of said liquid crystal layer becomes higher than luminosities of other parts while a light source part of said light source means is turned on, and

the luminosity of said scattering part of said liquid crystal layer becomes lower than the luminosities of the other parts while said light source part is turned off.

5. (Amended) A liquid crystal display device according to claim 1, wherein

said light source means comprises a light source part and a polarization separating device disposed between the light source part and an outer peripheral part of said liquid crystal display panel.

6. (Amended) A liquid crystal display device according to claim 2, wherein

said light source means comprises a light source part and a polarization separating device disposed between the light source part and an outer peripheral part of said liquid crystal display panel.

7. (Amended) A liquid crystal display device according to claim 5, wherein

an optical means composed of a convex lens or a diffuser is provided between said light source part of said light source means and said polarization separating device.

8. (Amended) A liquid crystal display device according to claim 6, wherein

an optical means composed of a convex lens or a diffuser is provided between said light source part of said light source means and said polarization separating device.

9. (Amended) A liquid crystal display device according to claim 5, wherein

said scattering type liquid crystal layer of said liquid crystal display panel is a mixed liquid crystal layer composed of transparent solid substances and a liquid crystal, which is produced by applying ultraviolet light to liquid composed of liquid crystal and organic monomers, and

said polarization separating device is disposed so that a transmission axis thereof almost matches with a direction in which a difference between a refractive index of said transparent solid substance and a refractive index of said liquid crystal of said mixed liquid crystal layer is small.

10. (Amended) A liquid crystal display device according to claim 6, wherein

said scattering type liquid crystal layer of said liquid crystal display panel is a mixed liquid crystal layer composed of transparent solid substances having alignment properties and a liquid crystal, which is produced by applying ultraviolet light to liquid made by mixing liquid crystal polymers into liquid crystal and organic monomers, and

said polarization separating device is disposed so that a transmission axis thereof almost matches with a direction in which a difference between a refractive index of said transparent solid substance and a refractive index of said liquid crystal of said mixed liquid crystal layer is small.

11. A liquid crystal display device according to claim 9, wherein said polarization separating device is an absorption type polarizer having a transmission axis and an absorption axis substantially perpendicular to the transmission axis.

12. A liquid crystal display device according to claim 10, wherein said polarization separating device is an absorption type polarizer having a transmission axis and an absorption axis substantially perpendicular to the transmission axis.

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13. A liquid crystal display device according to claim 9, wherein said polarization separating device is a reflection type polarizer having a transmission axis and a reflection axis substantially perpendicular to the transmission axis.

14. A liquid crystal display device according to claim 10, wherein said polarization separating device is a reflection type polarizer having a transmission axis and a reflection axis substantially perpendicular to the transmission axis.

15. A liquid crystal display device according to claim 13, wherein a diffuser is provided between said polarization separating device and said light source part, and a reflector is provided around said light source part.

16. A liquid crystal display device according to claim 14, wherein a diffuser is provided between said polarization separating device and said light source part, and a reflector is provided around said light source part.

17. A liquid crystal display device according to claim 9, wherein said polarization separating device is composed of an absorption type polarizer having a transmission axis and an absorption axis substantially perpendicular to the transmission axis, and a reflection type polarizer having a transmission axis and a reflection axis substantially perpendicular to the transmission axis

transmission axis, and said absorption type polarizer is disposed on said liquid crystal display panel side and said reflection type polarizer is disposed on said light source part side respectively with directions of the respective transmission axes of said absorption type polarizer and said reflection type polarizer matching with each other.

18. A liquid crystal display device according to claim 10, wherein

said polarization separating device is composed of an absorption type polarizer having a transmission axis and an absorption axis substantially perpendicular to the transmission axis, and a reflection type polarizer having a transmission axis and a reflection axis substantially perpendicular to the transmission axis, and said absorption type polarizer is disposed on said liquid crystal display panel side and said reflection type polarizer is disposed on said light source part side respectively with directions of the respective transmission axes of said absorption type polarizer and said reflection type polarizer matching with each other.

19. (Amended) A liquid crystal display device according to claim 5, wherein

light intensity change means which controls increase and decrease of an intensity of light to make incident on said liquid crystal display panel in accordance with an intensity of light incident on said liquid crystal display panel from outside said first substrate is provided in said light source means.

20. (Amended) A liquid crystal display device according to claim 6, wherein

light intensity change means which controls increase and decrease of an intensity of light to make incident on said liquid crystal display panel in accordance with an intensity of light incident on said liquid crystal display panel from outside said first substrate is provided in said light source means.

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21. (Amended) A liquid crystal display device according to claim 19, wherein

said light intensity change means comprises a liquid crystal cell provided between said polarization separating device and the light source part, a polarizer arranged on a light source part side of the liquid crystal cell, an exposure meter for detecting the intensity of the light incident from outside said first substrate, and a liquid crystal driving circuit for changing voltage applied to said liquid crystal cell in accordance with an output from said exposure meter.

22. (Amended) A liquid crystal display device according to claim 20, wherein

said light intensity change means comprises a liquid crystal cell provided between said polarization separating device and the light source part, a polarizer arranged on a light source part side of the liquid crystal cell, an exposure meter for detecting the intensity of the light incident from outside said first substrate, and a liquid crystal driving circuit for changing voltage applied to said liquid crystal cell in accordance with an output from said exposure meter.

23. A liquid crystal display device according to claim 9, wherein

an ultraviolet cutting layer is provided at least on one of outer surfaces of said first and second substrates of said liquid crystal display panel.

24. A liquid crystal display device according to claim 10, wherein

an ultraviolet cutting layer is provided at least on one of outer surfaces of said first and second substrates of said liquid crystal display panel.

25. A liquid crystal display device according to claim 9, wherein

an anti-reflection layer for preventing reflection of light within a wavelength range of light emitted by said light source part is provided at least

on one of outer surfaces of said first and second substrates of said liquid crystal display panel.

26. A liquid crystal display device according to claim 10, wherein

an anti-reflection layer for preventing reflection of light within a wavelength range of light emitted by said light source part is provided at least on one of outer surfaces of said first and second substrates of said liquid crystal display panel.

27. A liquid crystal display device according to claim 9, wherein

said liquid crystal display device is a module to be installed in a finder optical system of a camera, and said pattern electrode of said liquid crystal display panel is an electrode for displaying an autofocus target pattern.

28. A liquid crystal display device according to claim 10, wherein

said liquid crystal display device is a module to be installed in a finder optical system of a camera, and said pattern electrode of said liquid crystal display panel is an electrode for displaying an autofocus target pattern.

29. A liquid crystal display device according to claim 27, wherein

a finder screen is disposed outside said first substrate and a finder lens is disposed outside said second substrate of said liquid crystal display panel respectively.

30. A liquid crystal display device according to claim 28, wherein

a finder screen is disposed outside said first substrate and a finder lens is disposed outside said second substrate of said liquid crystal display panel respectively.

31. (Added) A liquid crystal display device according to claim 5, wherein

said light source part can selectively emit lights in different optical wavelength regions.

32. (Added) A liquid crystal display device according to claim 6, wherein

said light source part can selectively emit lights in different optical wavelength regions.

33. (Added) A liquid crystal display device according to claim 5, wherein

said light source part can be selectively turned on in accordance with brightness of environments or strength of incoming light, and period in which said light source part is turned on can be selected.

34. (Added) A liquid crystal display device according to claim 6, wherein

said light source part can be selectively turned on in accordance with brightness of environments or strength of incoming light, and period in which said light source part is turned on can be selected.

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